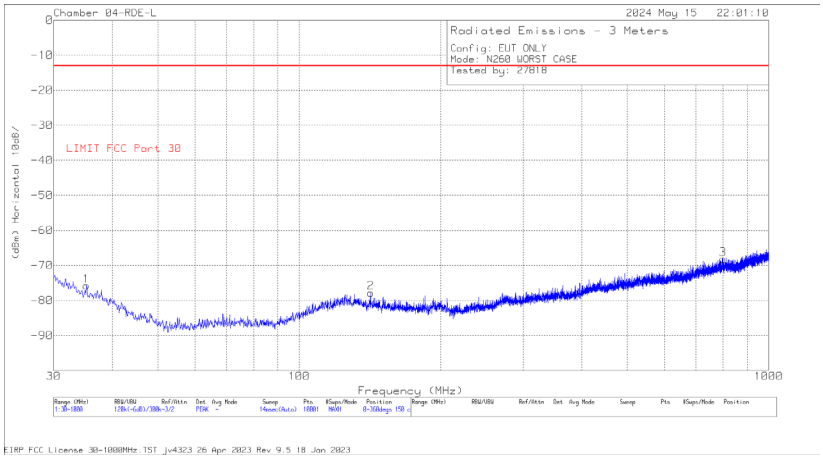
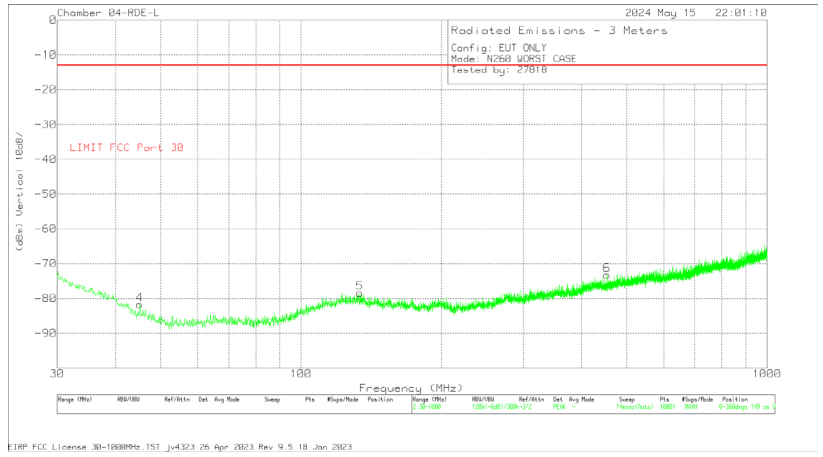
8.4.29. RSE n260 30 – 1000 MHz

30 – 1000 MHz, 1CC (Pre-scan using Pk Det.)

Horizontal



Vertical



Trace Markers

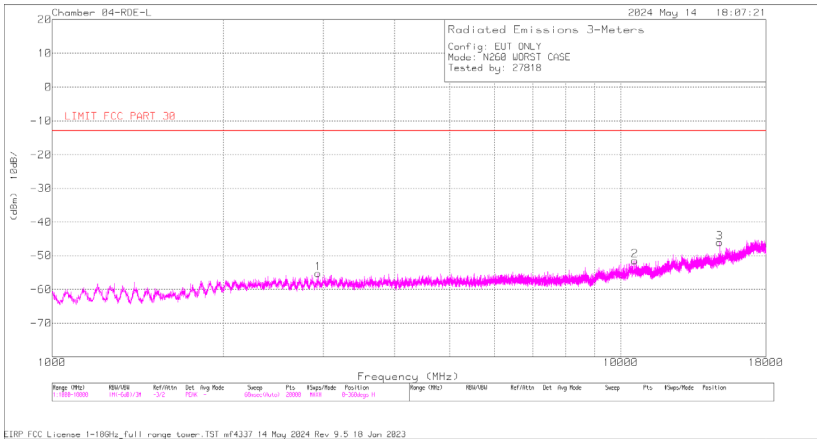
Marker	Frequency (MHz)	Meter Reading (dBm)	Det	174374 ANSI ACF (dB/m)	Amp/Cbls (dB)	Unit Conversion (dB)	Corrected Reading (dBm)	FCC Part 30 TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	35.238	-79.4	Pk	22.9	-31	11.7	-75.8	-13	-62.8	0-360	150	H
2	142.132	-78.29	Pk	18.8	-30	11.7	-77.79	-13	-64.79	0-360	150	H
3	799.501	-79.92	Pk	27	-27	11.7	-68.22	-13	-55.22	0-360	150	H
4	45.035	-78.84	Pk	16.3	-30.9	11.7	-81.74	-13	-68.74	0-360	149	V
5	133.79	-79.29	Pk	19.3	-30.1	11.7	-78.39	-13	-65.39	0-360	149	V
6	453.502	-79.4	Pk	22.9	-28.4	11.7	-73.2	-13	-60.2	0-360	149	V

Pk - Peak detector

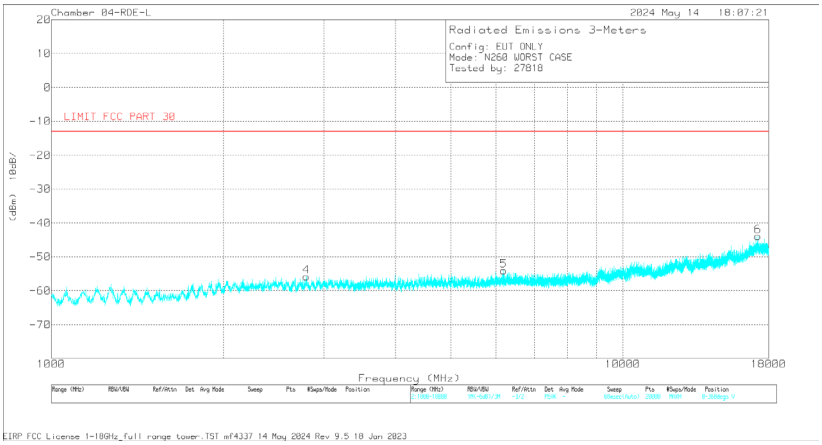
8.4.30. RSE n260 1 - 18 GHz

1 – 18 GHz, 1CC (Pre-scan using Pk Det.)

Horizontal



Vertical



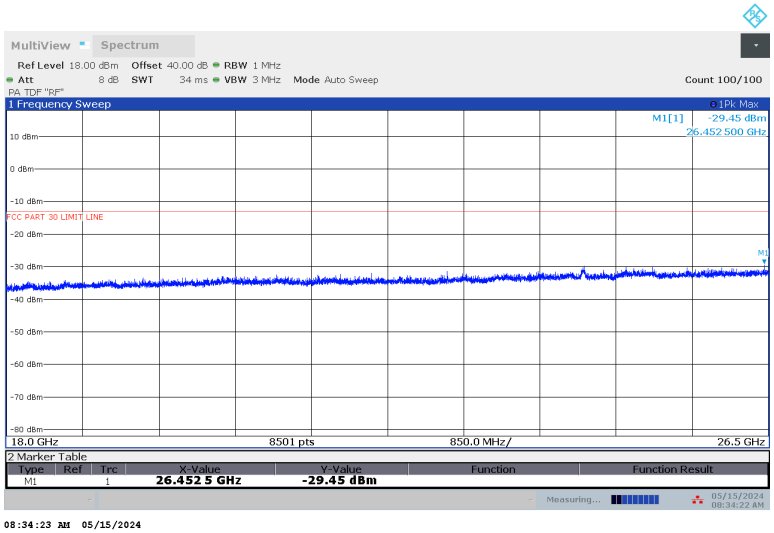
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBm)	Det	206805 ACF (dB/m)	Amp/Cbl (dB)	Unit Conversion (dB)	Corrected Reading (dBm)	FCC Part 30 TRP Limit (dBm)	Margin (dB)	Azimuth (Degs)	Height (cm)	Polarity
1	2936.398	-50.05	Pk	32.6	-49.4	11.7	-55.15	-13	-42.15	0-360	200	H
2	10587.635	-61.5	Pk	37.9	-39.5	11.7	-51.4	-13	-38.4	0-360	399	H
3	14930.505	-61.85	Pk	39.8	-35.7	11.7	-46.05	-13	-33.05	0-360	399	H
4	2797.841	-50.42	Pk	32.4	-49.5	11.7	-55.82	-13	-42.82	0-360	399	V
5	6190.363	-57.51	Pk	35.5	-43.7	11.7	-54.01	-13	-41.01	0-360	399	V
6	17233.271	-64.23	Pk	41.6	-32.9	11.7	-43.83	-13	-30.83	0-360	399	V

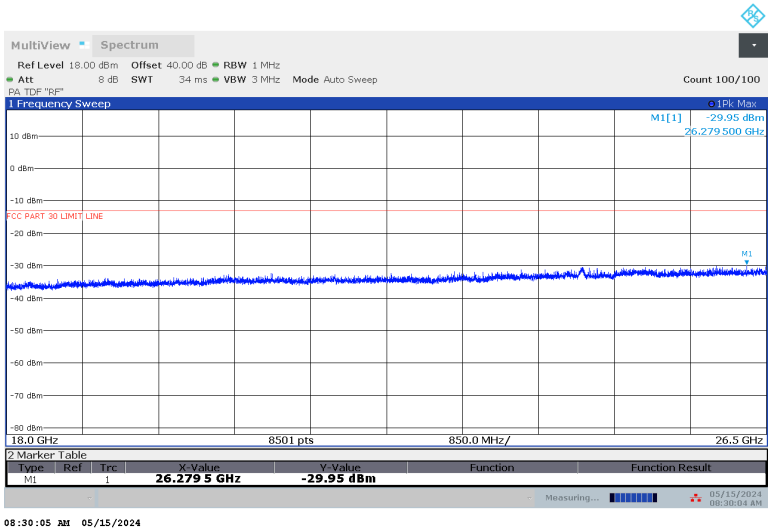
Pk - Peak detector

8.4.31. RSE n260 18 - 26.5 GHz

18 - 26.5 GHz, 1CC (Pre-scan using Pk Det.)
Horizontal



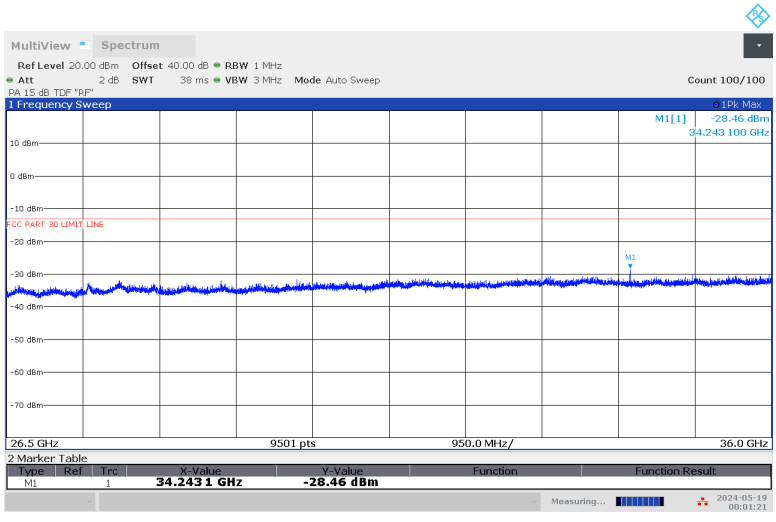
18 - 26.5 GHz, 1CC (Pre-scan using Pk Det.)
Vertical



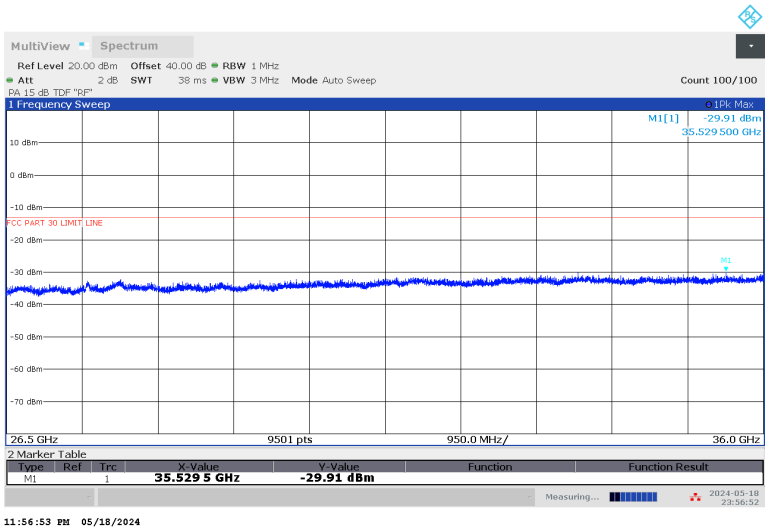
No emission detected using Peak Detection.

8.4.32. RSE n260 26.5 - 36 GHz

26.5 - 36 GHz, 1CC (Pre-scan using Pk Det.)
Horizontal



26.5 - 36 GHz, 1CC (Pre-scan using Pk Det.)
Vertical



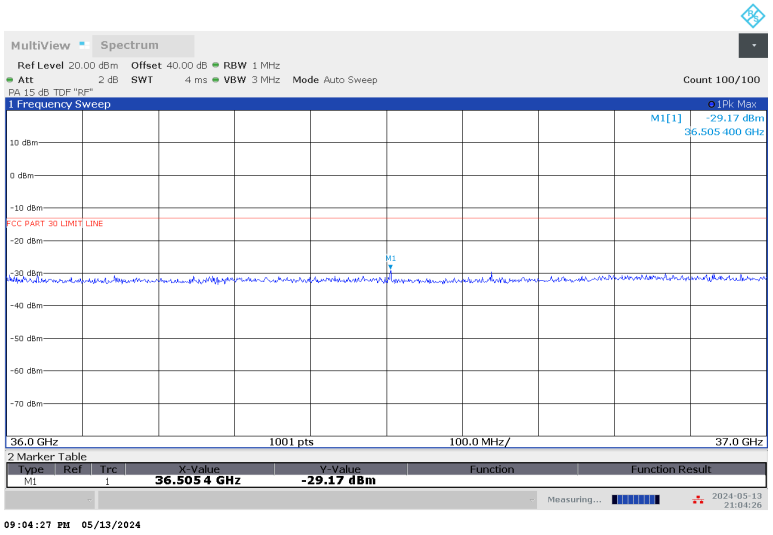
Emissions detected using Peak Detection at pre-scan. Avg EIRP was measured.

26.5 - 36 GHz n260, 1CC

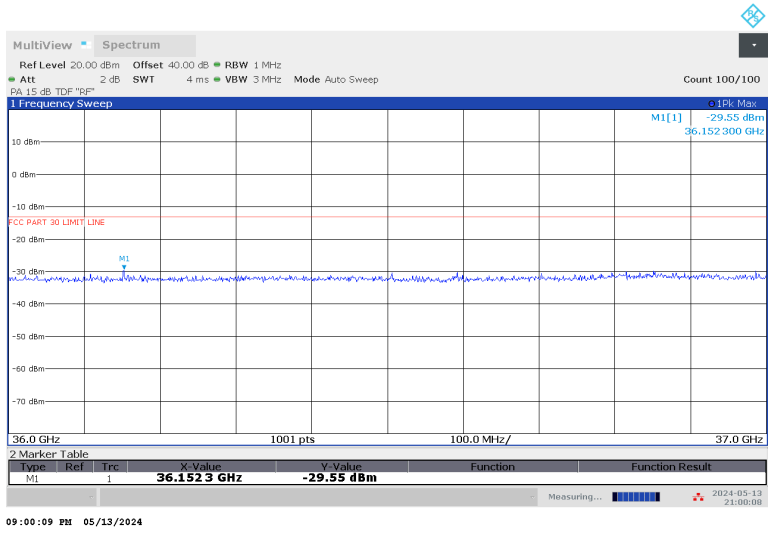
Freq.	Meas. Distance	Rx Ant. Polarity	Corrected Avg EIRP	TRP Limit	Margin
(GHz)	(m)	H/V	(dBm)	(dBm)	(dB)
34.243	3	H	-30.84	-13	-17.84
34.243	3	V	-37.96	-13	-24.96

8.4.33. RSE n260 36 – 37 GHz

36 - 37 GHz, 1CC (Pre-scan using Pk Det.)
Horizontal



36 - 37 GHz, 1CC (Pre-scan using Pk Det.)
Vertical



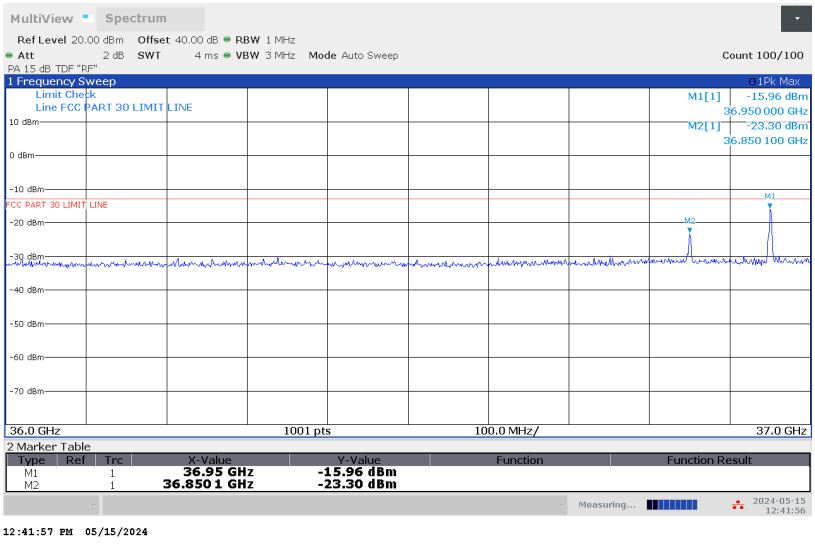
Emissions detected using Peak Detection at pre-scan. Avg EIRP was measured.

36 - 37 GHz n260, 1CC

Freq.	Meas. Distance	Rx Ant. Polarity	Corrected Avg EIRP	TRP Limit	Margin
(GHz)	(m)	H/V	(dBm)	(dBm)	(dB)
36.505	3	H	-33.82	-13	-20.82
36.505	3	V	-37.1	-13	-24.10

36 - 37 GHz n260, 2CC

36 - 37 GHz, 2CC (Pre-scan using Pk Det.)



Worst case configuration:
SISO-DUAL_QPSK_(100 MHz + 100 MHz)_Low CH_RB Offset 1/32 (1RB-M)

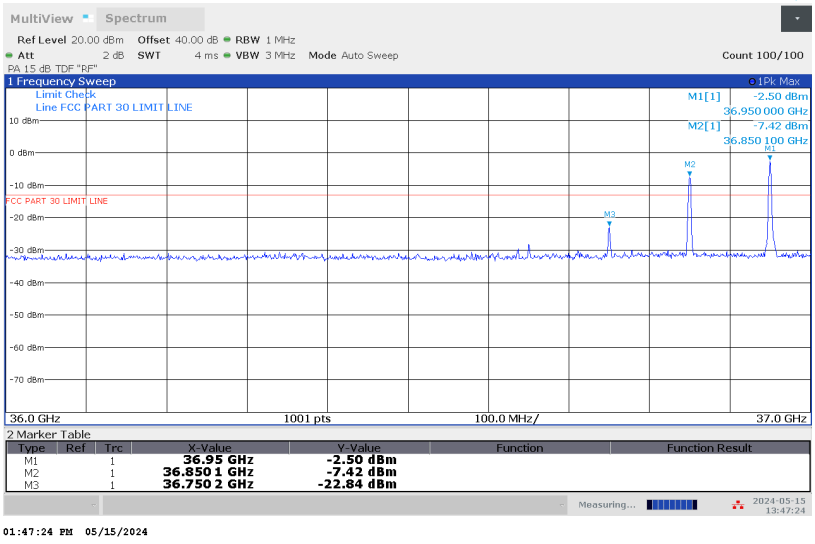
Emissions detected using Peak Detection at pre-scan. Avg EIRP was measured.

All emissions were investigated, and the highest emission was reported.

Freq.	Meas. Distance	Rx Ant. Polarity	Corrected Avg EIRP	TRP Limit	Margin
(GHz)	(m)	H/V	(dBm)	(dBm)	(dB)
36.949	3	H	-15.24	-13	-2.24

36 - 37 GHz n260, 3CC

36 - 37 GHz, 3CC (Pre-scan using Pk Det.)



Worst case configuration:
SISO-DUAL_QPSK_(100 MHz + 100 MHz + 100 MHz)_Low CH_RB Offset 1/32 (1RB-M)

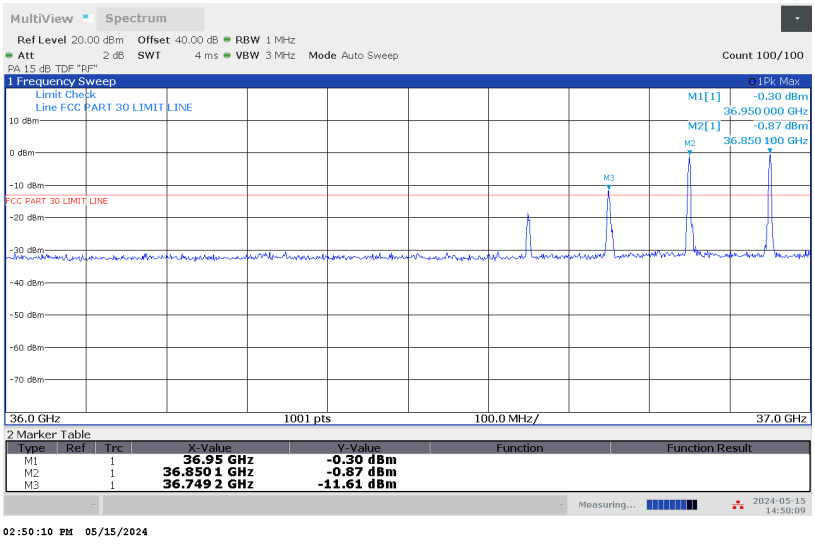
Emissions detected using Peak Detection at pre-scan. Avg EIRP or TRP was measured.

All emissions were investigated, and the highest emission was reported.

Freq.	Meas. Distance	TRP	TRP Limit	Margin
(GHz)	(m)	(dBm)	(dBm)	(dB)
36.949	3	-25.19	-13	-12.19

36 - 37 GHz n260, 4CC

36 - 37 GHz, 4CC (Pre-scan using Pk Det.)



Worst case configuration:
SISO-DUAL_QPSK_(100 MHz + 100 MHz + 100 MHz + 100 MHz)_Low CH_RB Offset 1/32 (1RB-M)

Emissions detected using Peak Detection at pre-scan. Avg EIRP or TRP was measured.

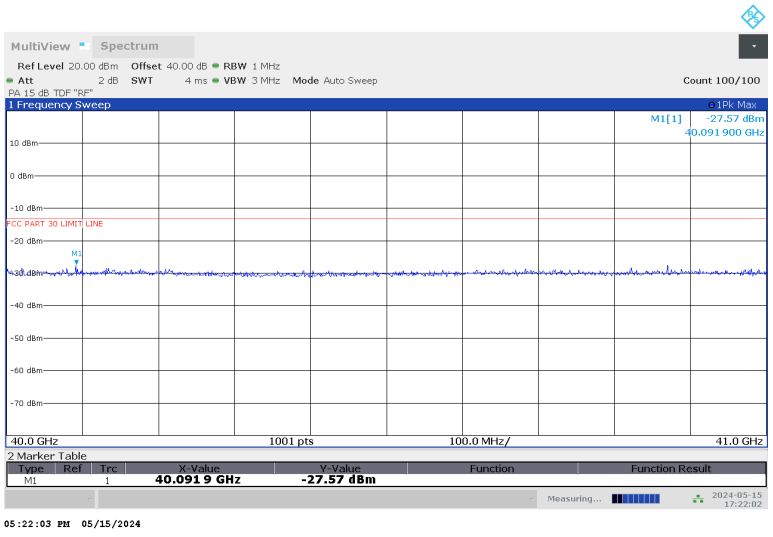
All emissions were investigated, and the highest emission was reported.

Freq.	Meas. Distance	TRP	TRP Limit	Margin
(GHz)	(m)	(dBm)	(dBm)	(dB)
36.949	3	-23.35	-13	-10.35

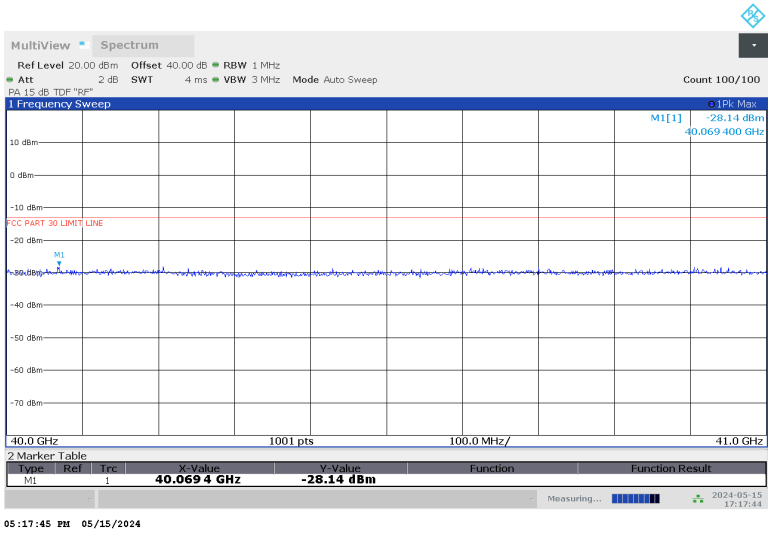
8.4.34. RSE n260 40 – 41 GHz

Note: 37 - 40 GHz covered by Fundamental and BE measurements.

40 – 41 GHz, 1CC (Pre-scan using Pk Det.)
Horizontal



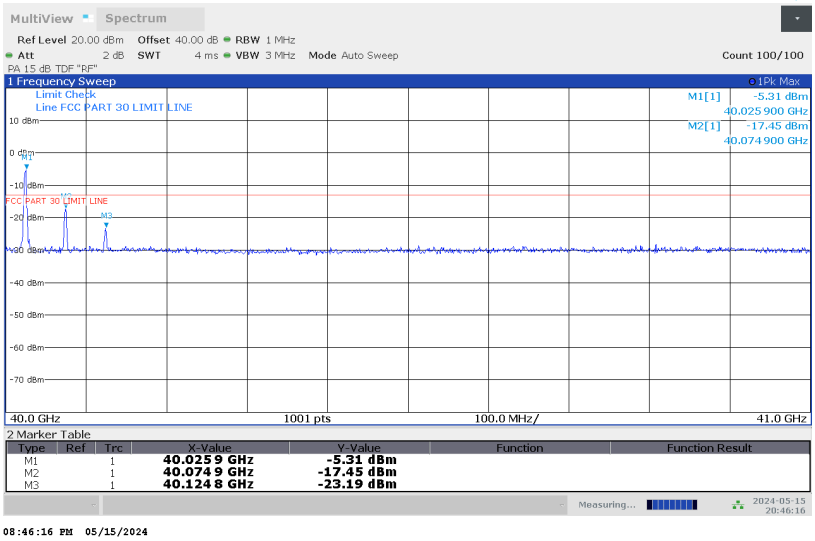
40 – 41 GHz, 1CC (Pre-scan using Pk Det.)
Vertical



No emission detected using Peak Detection.

40 – 41 GHz n260, 2CC

40 – 41 GHz, 2CC (Pre-scan using Pk Det.)



Worst case configuration:
SISO-DUAL_QPSK_(50 MHz + 50 MHz)_High CH_RB Offset 1/15 (1RB-M)

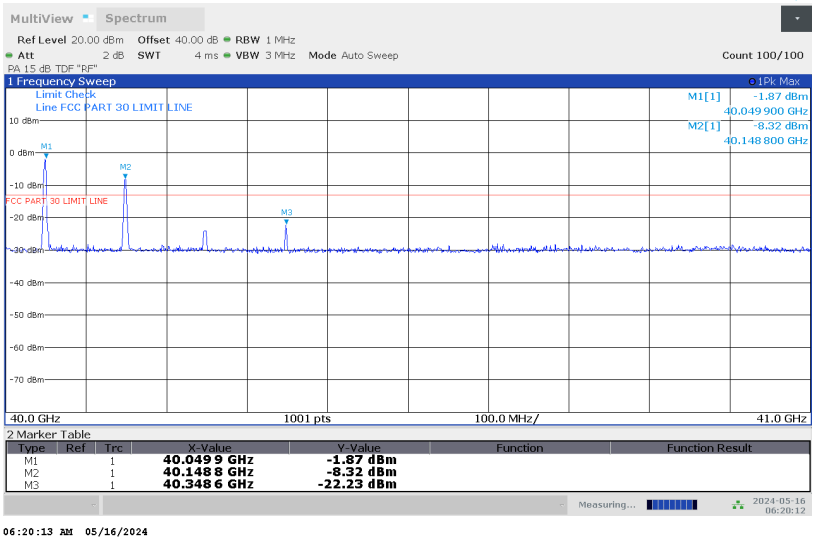
Emissions detected using Peak Detection at pre-scan. Avg EIRP was measured.

All emissions were investigated, and the highest emission was reported.

Freq.	Meas. Distance	Rx Ant. Polarity	Corrected Avg EIRP	TRP Limit	Margin
(GHz)	(m)	H/V	(dBm)	(dBm)	(dB)
40.024	3	H	-17.97	-13	-4.97

40 – 41 GHz n260, 3CC

40 – 41 GHz, 3CC (Pre-scan using Pk Det.)



Worst case configuration:
SISO-DUAL_QPSK_(100 MHz + 100 MHz + 100 MHz)_High CH_RB Offset 1/32 (1RB-M)

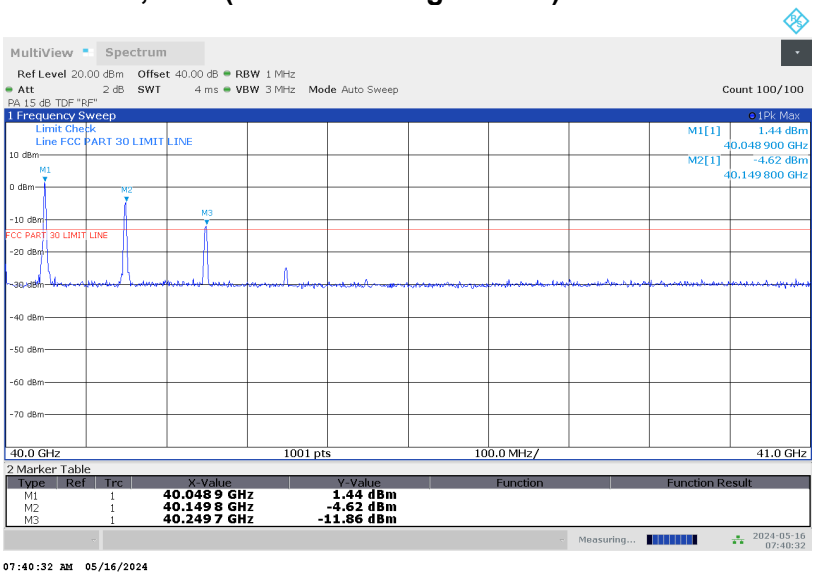
Emissions detected using Peak Detection at pre-scan. Avg EIRP or TRP was measured.

All emissions were investigated, and the highest emission was reported.

Freq.	Meas. Distance	TRP	TRP Limit	Margin
(GHz)	(m)	(dBm)	(dBm)	(dB)
40.049	3	-21.64	-13	-8.64

40 – 41 GHz n260, 4CC

40 – 41 GHz, 4CC (Pre-scan using Pk Det.)



Worst case configuration:
SISO-DUAL_QPSK_(100 MHz + 100 MHz + 100 MHz + 100 MHz)_High CH_RB Offset 1/32 (1RB-M)

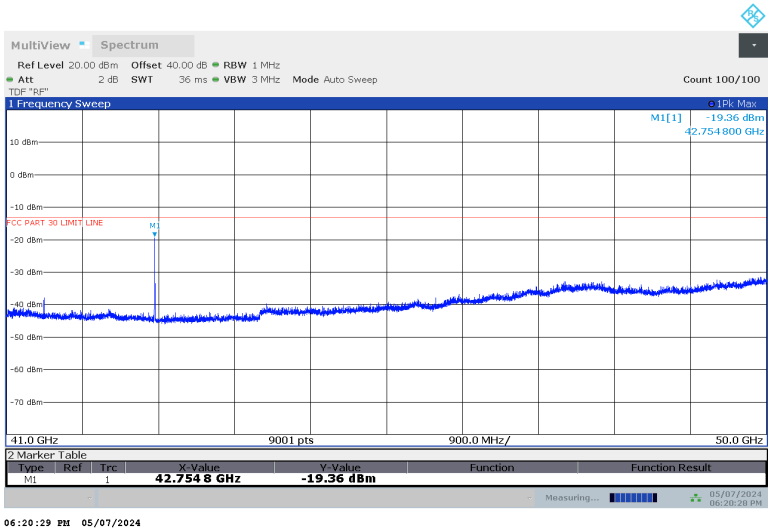
Emissions detected using Peak Detection at pre-scan. Avg EIRP or TRP was measured.

All emissions were investigated, and the highest emission was reported.

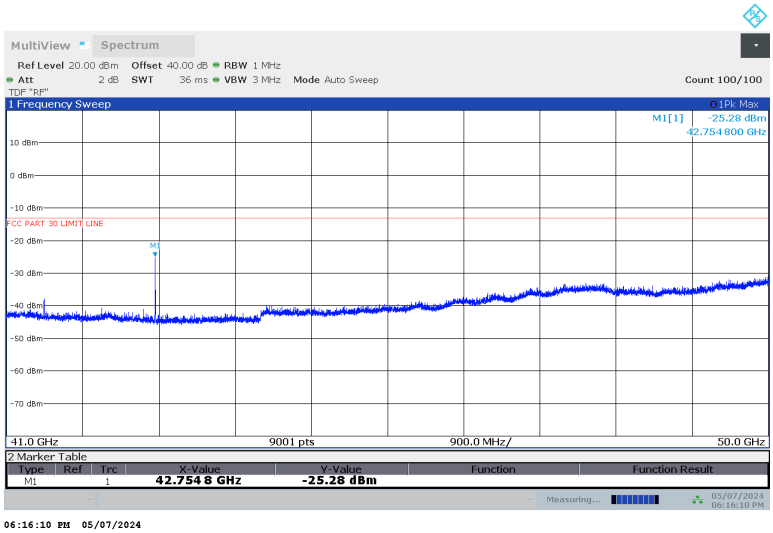
Freq.	Meas. Distance	TRP	TRP Limit	Margin
(GHz)	(m)	(dBm)	(dBm)	(dB)
40.049	3	-22.03	-13	-9.03

8.4.35. RSE n260 41 – 50 GHz

41 – 50 GHz, 1CC (Pre-scan using Pk Det.)
Horizontal



41 – 50 GHz, 1CC (Pre-scan using Pk Det.)
Vertical



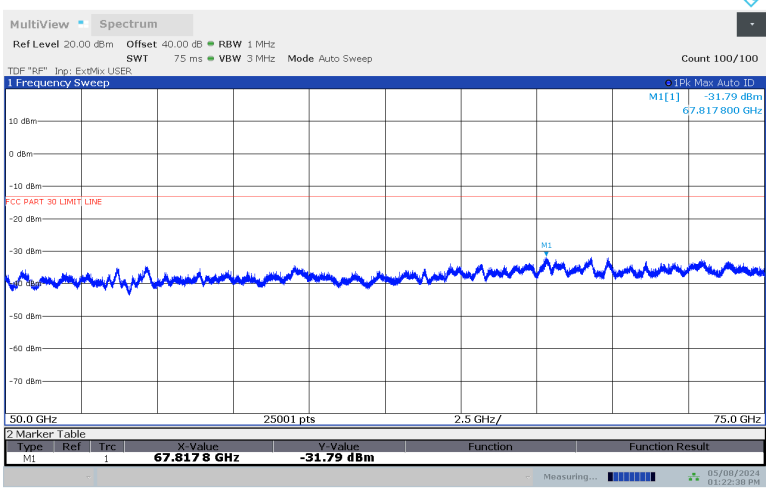
Emissions detected using Peak Detection at pre-scan. Avg EIRP was measured.

41 - 50 GHz n260, 1CC

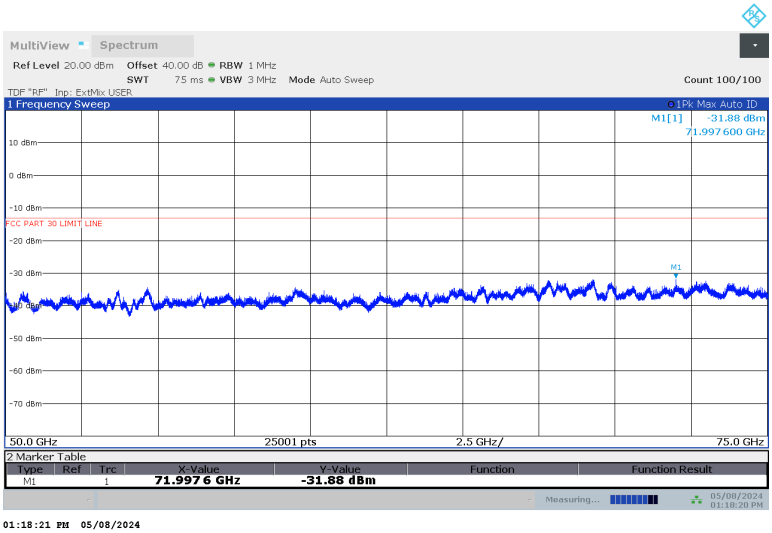
Freq.	Meas. Distance	Rx Ant. Polarity	Corrected Avg EIRP	TRP Limit	Margin
(GHz)	(m)	H/V	(dBm)	(dBm)	(dB)
42.755	3	H	-18.88	-13	-5.88
42.755	3	V	-38.58	-13	-25.58

8.4.36. RSE n260 50 - 75 GHz

50 - 75 GHz, 1CC (Pre-scan using Pk Det.)
Horizontal



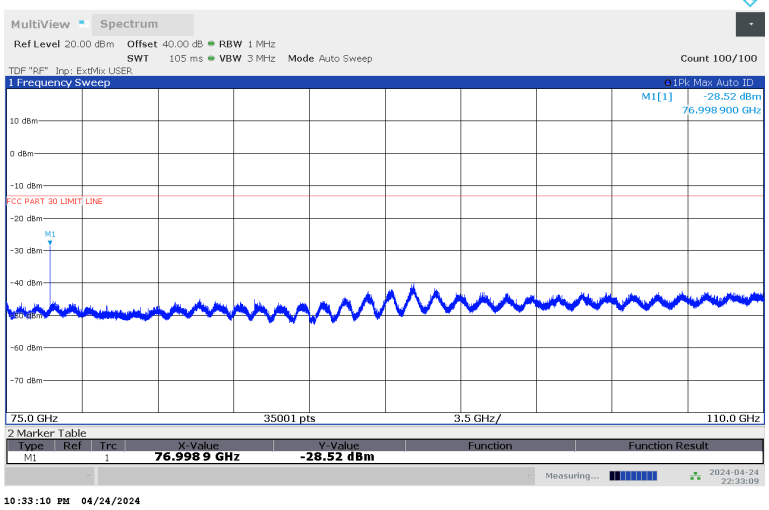
50 - 75 GHz, 1CC (Pre-scan using Pk Det.)
Vertical



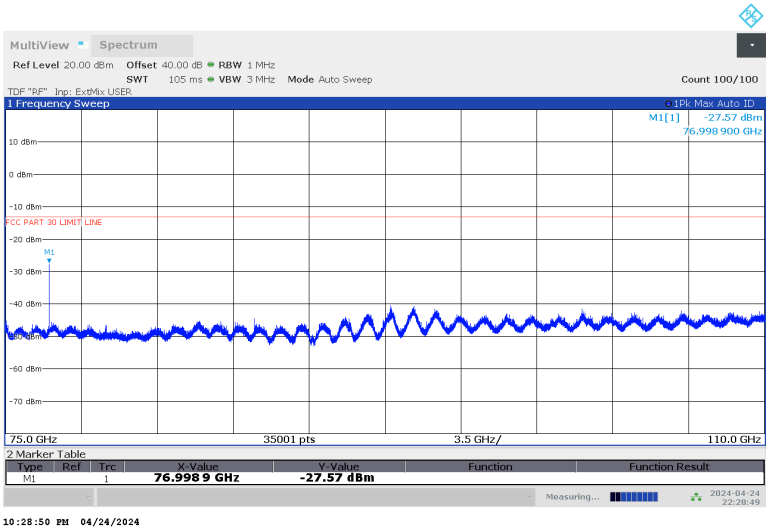
No emission detected using Peak Detection.

8.4.37. RSE n260 75 - 110 GHz

75 - 110 GHz, 1CC (Pre-scan using Pk Det.)
Horizontal



75 - 110 GHz, 1CC (Pre-scan using Pk Det.)
Vertical



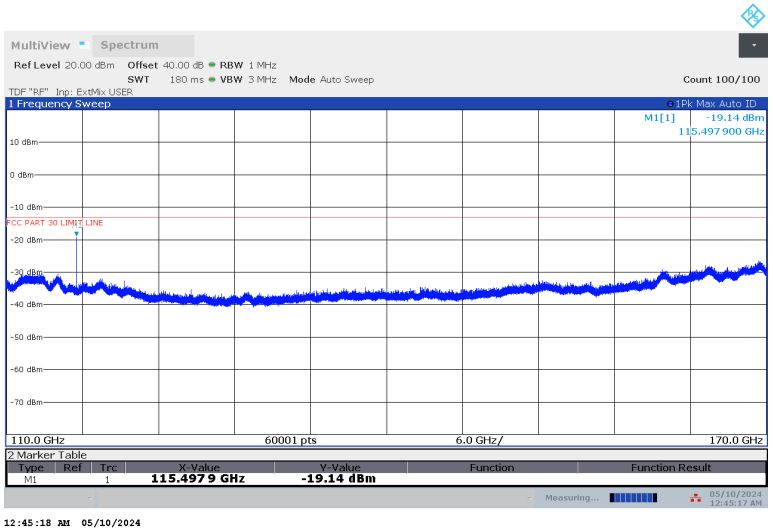
Emissions detected using Peak Detection at pre-scan. Avg EIRP was measured.

75 - 110 GHz n260, 1CC

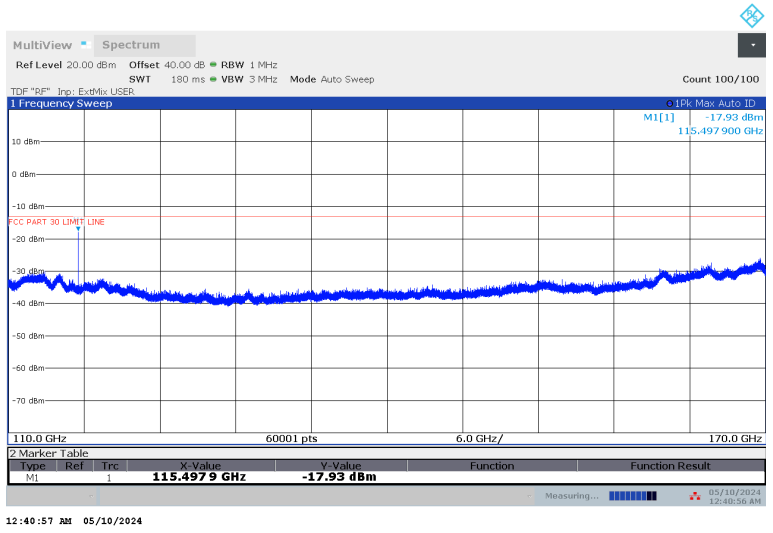
Freq.	Meas. Distance	Rx Ant. Polarity	Corrected Avg EIRP	TRP Limit	Margin
(GHz)	(m)	H/V	(dBm)	(dBm)	(dB)
76.998	1	H	-33.21	-13	-20.21
76.998	1	V	-41.20	-13	-28.20

8.4.38. RSE n260 110 - 170 GHz

110 - 170 GHz, 1CC (Pre-scan using Pk Det.)
Horizontal



110 - 170 GHz, 1CC (Pre-scan using Pk Det.)
Vertical



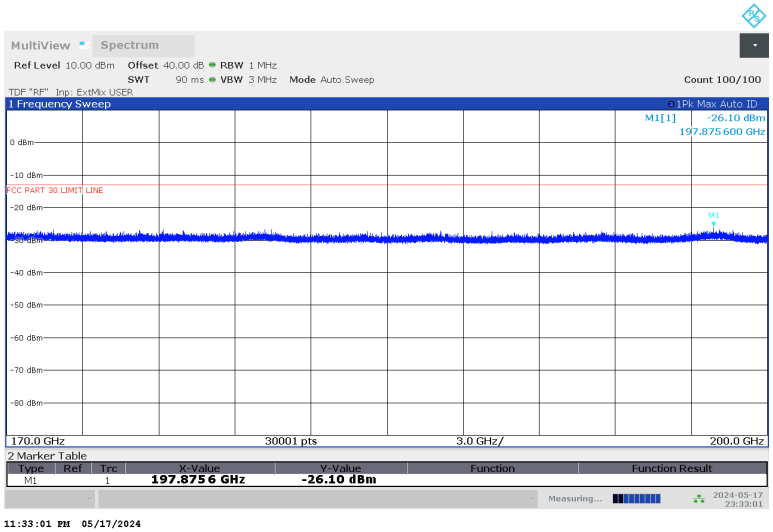
Emissions detected using Peak Detection at pre-scan. Avg EIRP was measured.

110 - 170 GHz n260, 1CC

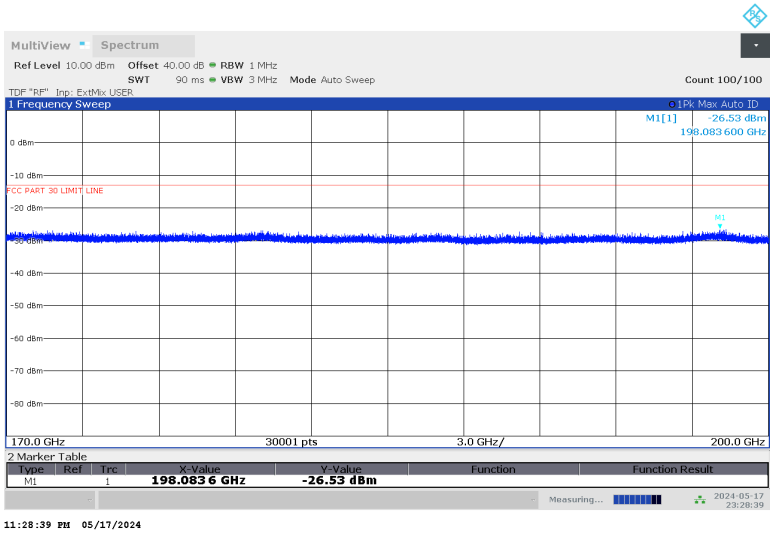
Freq.	Meas. Distance	Rx Ant. Polarity	Corrected Avg EIRP	TRP Limit	Margin
(GHz)	(m)	H/V	(dBm)	(dBm)	(dB)
115.497	1	H	-21.25	-13	-8.25
115.497	1	V	-28.76	-13	-15.76

8.4.39. RSE n260 170 - 200 GHz

170 - 200 GHz, 1CC (Pre-scan using Pk Det.)
Horizontal



170 - 200 GHz, 1CC (Pre-scan using Pk Det.)
Vertical



No emission detected using Peak Detection.

8.5. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055

LIMIT

For reporting purposes only

TEST PROCEDURES

KDB 842590 D01 Upper Microwave Flexible Use Service v01r02 Section 4.5
ANSI C63.26-2015 Section 5.6

Test procedures for temperature variation:

a. Position the EUT in temperature/humidity chamber with power off.
b. Set chamber temperature to 50°C and stabilize the EUT for at least 30 minutes.
c. Record maximum change in frequency within one minute after powering the EUT.
d. Decrease chamber temperature at 10°C intervals from 50°C to -30°C. Record maximum change in frequency at each temperature.
e. A period of at least 30 minutes is provided to allow stabilization of the equipment at each temperature level.

- Temp. = −30°C to +50°C

Test procedures for voltage variation:

a. Position the EUT in temperature/humidity chamber with power off.
b. Set chamber temperature to 20°C.
c. Record maximum frequency change within one minute after powering the EUT.
d. The primary supply voltage is varied from 85% to 115% of the nominal value for hand-carried, battery-powered equipment. Primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

- Voltage = (85% - 115%)
- Nominal: 3.8 VDC; Low: 3.23 VDC; High: 4.37 VDC

The measurements were performed with the CW signal of center frequency of each frequency band.

RESULTS

See the following pages.

Employee IDs: 31925 & 103479
Test Date: 05/22/24 - 05/23/24
Test Location: Temperature Chamber C

8.5.1. FREQUENCY STABILITY n258 SB1

Input Voltage	Environment	Frequency	Delta
	Temperature (ºC)	(GHz)	(kHz)
Normal	50	24.3550273	-9.100
Normal	40	24.3550184	-18.000
Normal	30	24.3550236	-12.800
Normal	***20***	***24.3550364***	***Reference***
Normal	10	24.3550403	3.900
Normal	0	24.3550532	16.800
Normal	-10	24.3550570	20.600
Normal	-20	24.3550875	51.150
Normal	-30	24.3551261	89.700
115%	20	24.3550313	-5.050
85%	20	24.3550309	-5.450

8.5.2. FREQUENCY STABILITY n258 SB2

Input Voltage	Environment	Frequency	Delta
	Temperature (ºC)	(GHz)	(kHz)
Normal	50	25.0049714	27.250
Normal	40	25.0049589	14.700
Normal	30	25.0049511	6.900
Normal	***20***	***25.0049442***	***Reference***
Normal	10	25.0049448	0.650
Normal	0	25.0049574	13.250
Normal	-10	25.0049624	18.250
Normal	-20	25.0049876	43.400
Normal	-30	25.0050128	68.650
115%	20	25.0049145	-29.700
85%	20	25.0049227	-21.450

UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

8.5.3. FREQUENCY STABILITY n261

Input Voltage	Environment	Frequency	Delta
	Temperature (ºC)	(GHz)	(kHz)
Normal	50	27.9300565	67.150
Normal	40	27.9300228	33.400
Normal	30	27.9299916	2.200
Normal	***20***	***27.9299894***	***Reference***
Normal	10	27.9300119	22.500
Normal	0	27.9300156	26.200
Normal	-10	27.9300325	43.100
Normal	-20	27.9300412	51.850
Normal	-30	27.9300675	78.150
115%	20	27.9299788	-10.600
85%	20	27.9299851	-4.250

8.5.4. FREQUENCY STABILITY n260

Input Voltage	Environment	Frequency	Delta
	Temperature (ºC)	(GHz)	(kHz)
Normal	50	38.5050011	52.300
Normal	40	38.5049765	27.700
Normal	30	38.5049493	0.550
Normal	***20***	***38.5049488***	***Reference***
Normal	10	38.5049493	0.550
Normal	0	38.5049519	3.150
Normal	-10	38.5049752	26.450
Normal	-20	38.5050099	61.100
Normal	-30	38.5050579	109.150
115%	20	38.5049292	-19.550
85%	20	38.5049370	-11.750

The occupied bandwidths (Section 8.1) are smaller than the channel bandwidths by at least 3 MHz for all modes of operation, the signal is at least 1.5 MHz from either edge of the channel. As the channels are fully contained within the FCC-allocated bands, and the frequency stability is significantly less than 1.5 MHz, with maximum frequency shift of 109.15 kHz over the test conditions (n260 at -30ºC). The signal is always contained within the allocated channel, therefore, always contained within the allocated band.

9. SETUP PHOTOS

Please refer to 14982484-EP29V1 for setup photos.

END OF REPORT

UL VERIFICATION SERVICES INC
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 319-4000 FAX: (510) 661-0888

APPENDIX A

1. 50 - 75 GHz VDI WR15SAX-F

Serial No.: SAX 621

2. 75 - 110 GHz VDI WR10SAX-F

Serial No.: SAX 860

3. 110 - 170 GHz VDI WR6.5SAX-F

Serial No.: SAX 624

4. 170 - 260 GHz VDI WR4.3SAX-F

Serial No.: SAX 651

UL VERIFICATION SERVICES INC
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DocuSign Envelope ID: 6883241A-2E4E-4B2C-A46D-F6C20886CF35

Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902
Phone: 434-297-3257
Fax: 434-297-3258

Certificate of Conformance

To: UL LLC
47173 Benicia Street
Fremont, CA 94538
United States

From: Virginia Diodes, Inc
979 2nd St. SE
Suite 309
Charlottesville, VA 22902

Packing List No: 235277
Shipping Date: 11/14/2023
Today's Date: 11/14/2023
PO Number: 7862027793

Quantity Shipped	Unit	Description	Order-Job Number
1	EA	RETEST-WR15SAX-F - WR15SAX / SN: SAX 621	230557A-01
1	EA	RETEST-WR10SAX-F - WR10SAX - SN: SAX 860	230557A-02
1	EA	RETEST-WR6.5SAX-F - WR6.5SAX / SN: SAX 624	230557A-03
1	EA	RETEST-WR4.3SAX-F - WR4.3SAX - SN: SAX 651	230557A-04

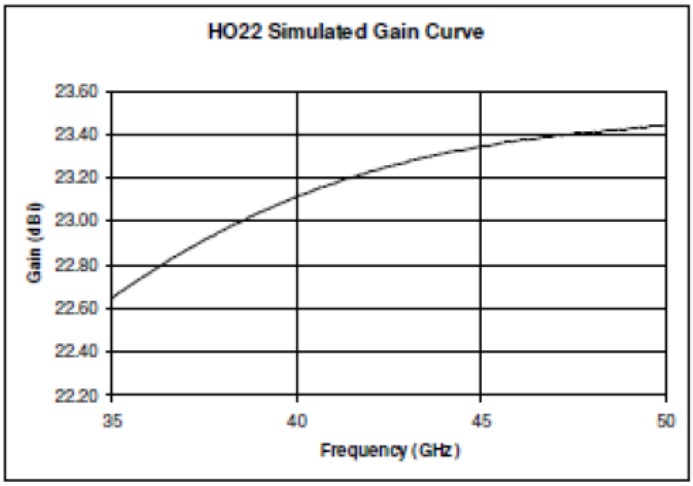
The VDI product(s) in this shipment meet(s) the guidelines for performance specifications established in accordance with the corresponding Purchase Order. Data presented in the User Guide, where applicable, has been obtained in accordance with VDI's Quality Management System. All instruments, used to obtain data, which require calibration have been calibrated with equipment traceable to the National Institute of Standards and Technology (NIST) and through NIST to the International System of Units (SI).

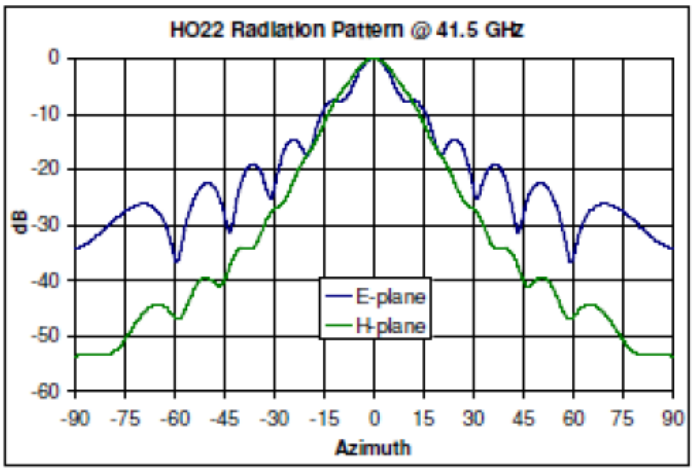
Authorized Signature
Virginia Diodes, Inc

BW

5. 35 - 50 GHz CMI HO22R HORN ANTENNA

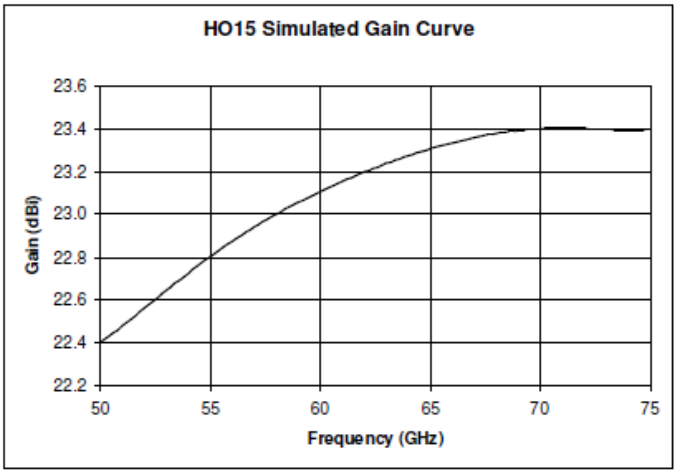
24 Boston Court
Longmont, CO 80501
303 651-0707 (P)
303 651-0706 (F)
www.custommicrowave.com

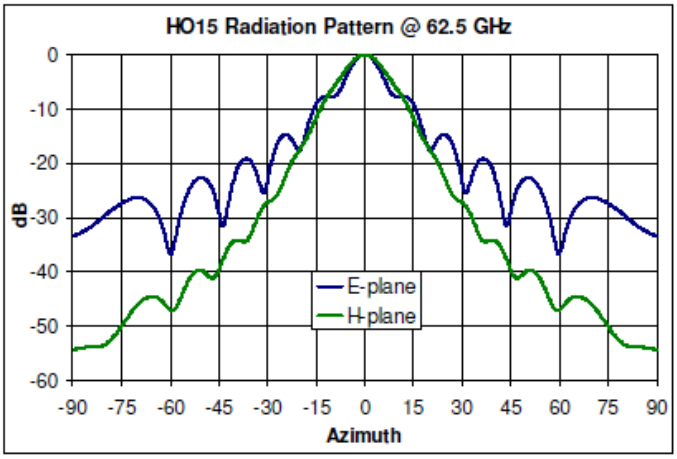




6. 50 - 75 GHz CMI HO15R HORN ANTENNA

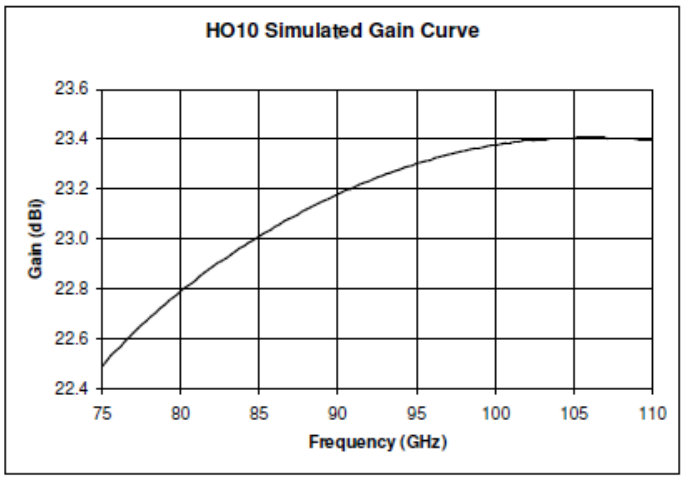
custom microwave inc.
24 Boston Court
Longmont, CO 80501
303 651-0707(P)
303 651-0706(F)
www.custommicrowave.com

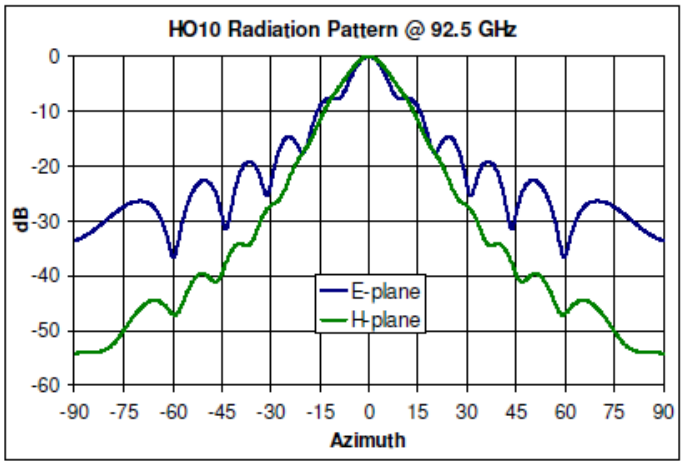




7. 75 - 110 GHz CMI HO10R HORN ANTENNA

custom microwave inc.
24 Boston Court
Longmont, CO 80501
303 651-0707(P)
303 651-0706(F)
www.custommicrowave.com





8. 110 - 170 GHz CMI HO6R HORN ANTENNA

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303 651-0707(P)
303 651-0706(F)
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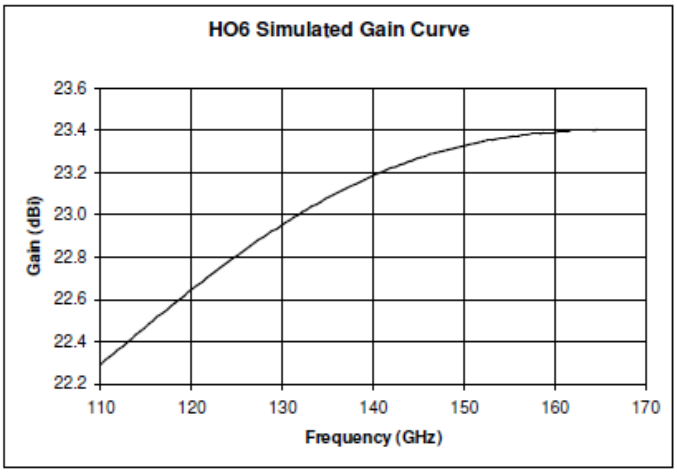

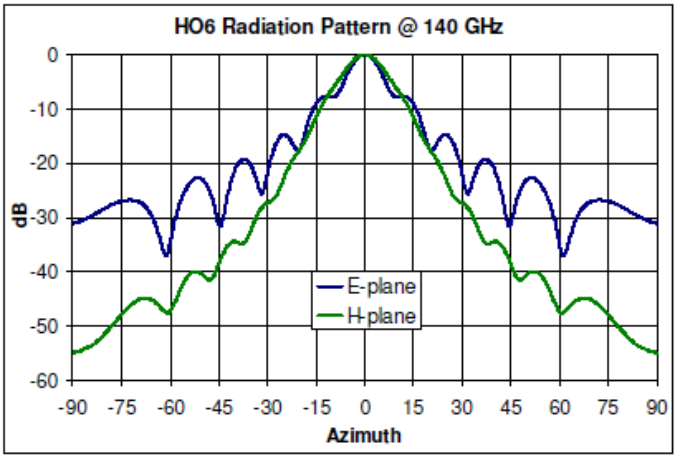

9. 170 - 260 GHz CMI HO4R HORN ANTENNA

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